WHAT IS CLAIMED IS:

1. A method of forming a view of an object scene, comprising:

distributing a set of line samples across an object scene such that the distribution of the set of line samples is non-regular;

computing a view of the object scene along each line sample in the set of line samples; and

combining the view of object scene along each line sample in the set of line samples to form a view of the object scene.

2. The method of claim 1, further comprising transforming an object in the object scene from a three-dimensional representation to a two-dimensional representation.

3. The method of claim 2, wherein the distributing step includes

projecting objects in the object scene onto an image plane; and

positioning the set of line samples on the image plane.

4. The method of claim 1, wherein the distributing step comprises:

selecting an orientation for a line sample from the set of line samples; and

choosing a plane for the line sample,

whereby the line sample passes through the chosen plane with the selected orientation.

5. The method of claim 4, wherein the orientation is greater than or equal to zero-degrees and less than one hundred and eighty-degrees.

6. The method of claim 4, wherein the orientation is selected by reference to a low discrepancy sequence of numbers.

7. The method of claim 4, wherein the orientation is selected by reference to a pseudo-random sequence of numbers.

8. The method of claim 4, wherein the plane passes through a central position within a region of the object scene.

9. The method of claim 4, wherein the choosing step comprises

selecting a translation amount; and

translating the line sample by reference to the translation amount.

10. The method of claim 9, wherein the line sample is confined to an area of the object scene and the line sample is translated from a position on a perimeter of the area.

11. The method of claim 10, wherein the position is an origin of the area.

12. The method of claim 11, wherein the origin is selected by reference to the orientation.

13. The method of claim 9, wherein the translation amount is limited to a translation range, said translation range being a function of the orientation and a size of the area.

14. The method of claim 13, wherein the translation range is equal to $h \times \cos(\theta)$,

where h is a maximum distance across the area, and

where θ is derived from the orientation.

15. The method of claim 14, wherein the maximum distance is not greater than $\sqrt{x^2 + y^2}$,

where x is a width of the area, and

where y is a height of the area.

16. The method of claim 14, wherein θ is equal to the orientation adjusted by 45-degrees.

17. The method of claim 14, wherein θ is equal to the orientation adjusted by 135-degrees.

18. The method of claim 1, wherein the distributing step comprises

selecting for each line sample an area defined by an intersection of the line sample and a region of the object scene within which each line sample is positioned; and

controlling the selecting step so that a selection of the area from a range of possible areas is substantially uniform.

19. The method of claim 4, wherein the choosing step comprises

selecting an area; and

positioning the line sample within a region of the object scene such that the area is formed within the region by an intersection of the line sample and the region,

whereby the plane is chosen.

20. The method of claim 19, wherein the positioning step includes translating the line sample by a translation amount derived from the area.

21. The method of claim 20, wherein the line sample is translated from a position on the perimeter of the region.

22. The method of claim 21, wherein the position is an origin of the region.

23. The method of claim 22, wherein the origin is selected by reference to the orientation.

24. The method of claim 20, wherein the translation amount is $\dfrac{\sqrt{2 \times s \times area}}{\sqrt{1+s^2}}$,

where s is a function of the orientation, and

area is greater than or equal to zero and less than $\dfrac{s}{2}$.

25. The method of claim 24, the function of the orientation is the $\cot(\theta)$,

where θ is derived from the orientation.

26. The method of claim 25, wherein θ is equal to the orientation adjusted by 90-degrees.

27. The method of claim 25, wherein θ is equal to the orientation adjusted by 180-degrees.

28. The method of claim 20, wherein the translation amount is $\frac{(area + \frac{s}{2})}{\sqrt{1 + s^2}}$, where s is a function of the orientation, and where area is greater than or equal to $\frac{s}{2}$ and less than 1-$\frac{s}{2}$.

29. The method of claim 28, the function of the orientation is the $\cot(\theta)$, where θ is derived from the orientation.

30. The method of claim 29, wherein θ is equal to the orientation adjusted by 90-degrees.

31. The method of claim 29, wherein θ is equal to the orientation adjusted by 180-degrees.

32. The method of claim 21, wherein the translation amount is $\frac{s + 1 - \sqrt{2s(1 - area)}}{\sqrt{1 + s^2}}$, where s is a function of the orientation, and area is greater than or equal to 1-$\frac{s}{2}$ and less than 1.

33. The method of claim 32, the function of the orientation is the $\cot(\theta)$, where θ is derived from the orientation.

34. The method of claim 33, wherein θ is equal to the orientation adjusted by 90-degrees.

35. The method of claim 33, wherein θ is equal to the orientation adjusted by 180-degrees.

36. The method of claim 4, wherein the plane is selected by reference to a low discrepancy sequence of numbers.

37. The method of claim 4, wherein the plane is selected by reference to a pseudorandom sequence of numbers.

38. The method of claim 1, wherein the distributing step includes

defining a plurality of sub-ranges of line sample positions from a range of line sample positions;

selecting a line sample position from each of the plurality of sub-ranges of line sample positions; and

positioning a line sample by reference to the selected line sample position.

39. The method of claim 38, wherein the line sample position is selected by reference to a non-regular sequence of numbers.

40. The method of claim 39, further comprising

assigning the line sample position to a line sample in an area of the object scene.

41. The method of claim 40, wherein the line sample to which the line position is assigned is selected by reference to a non-regular sequence of numbers.

42. The method of claim 1, wherein the distributing step comprises:

positioning a first line sample on the object scene;

distributing candidate line samples across the object scene;

scoring the candidate line samples by reference to the first line sample; and

selecting from the candidate line samples a second line sample by reference to a result of the scoring step.

43. The method of claim 42, wherein the scoring step comprises an orientation comparison such that an orientation of the first line sample is compared to an orientation of a line sample from the candidate line samples.

44. The method of claim 43, wherein the comparison includes determining a difference between the orientation of the first line sample and the orientation of the line sample from the candidate line samples.

45. The method of claim 44, wherein the comparison further includes normalizing the difference, such that a number within a range of zero to one is produced.

46. The method of claim 45, wherein the normalizing step includes dividing the difference by one-half of a maximum orientation.

47. The method of claim 43, wherein a result of the orientation comparison is weighted to adjust a contribution of the orientation comparison to a result of the scoring step.

48. The method of claim 42, wherein the scoring step comprises a distance determination such that a distance between the first line sample and a line sample from the candidate line samples is determined.

49. The method of claim 48, wherein the distance is calculated by reference to a mid-way point on the first line sample and a mid-way point on the line sample from the candidate line samples.

50. The method of claim 48, wherein the distance is calculated by reference to a position in a region of the object scene in which the first line sample is positioned and a position in a second region of the object scene in which the line sample from the candidate line samples is distributed.

51. The method of claim 48, wherein the distance determination includes normalizing the distance, such that a number within a range of zero to one is produced.

52. The method of claim 51, wherein the normalizing step includes dividing the difference by a maximum value of the distance.

53. The method of claim 48, wherein a result of the distance determination is weighted to adjust a contribution of the distance determination to a result of the scoring step.

54. The method of claim 51, wherein a score of each line sample is equal to $a(\frac{angle}{90}) + b(\frac{\text{distance}}{\text{maximum}})$,

where angle is a minimum angle between the first line sample and a line sample from the candidate line samples,

where distance is a distance between the first line sample and the line sample from the candidate line samples;

where maximum is a maximum value of the distance between the first line sample and the line sample from the candidate line samples;

where a is a factor that adjusts a contribution of $(\frac{angle}{90})$ to the score; and

where b is a factor that adjusts a contribution of $(\frac{\text{distance}}{\text{maximum}})$ to the score.

55. The method of claim 1, wherein the computing step comprises:

isolating a segment of the line sample that overlaps an object; and

calculating a distance of the object from the segment.

56. The method of claim 55, wherein the isolating step includes calculating a distance between a first end of the line sample and a transition on the line sample from not overlapping the object to overlapping the object, wherein a first end-point coordinate of the segment is derived from the distance.

57. The method of claim 55, wherein the isolating step includes calculating a distance between the first end of the line sample and a transition on the line sample from overlapping the object to not overlapping the object, wherein a second end-point coordinate of the segment is derived from the distance.

58. The method of claim 55, wherein a first end-point coordinate of the segment is set to zero if a first end of the line sample overlaps the object.

59. The method of claim 55, wherein a second end-point coordinate of the segment is set to a length of the line sample if a second end of the line sample overlaps the object.

60. The method of claim 55, further comprising maintaining object data in relation to the segment.

61. The method of claim 60, wherein said object data includes a color value of the object.

62. The method of claim 60, wherein said object data includes the distance of the object from the object scene.

63. The method of claim 60, wherein said object data includes a transparency value of the object.

64. The method of claim 55, wherein the distance is calculated from a first end of the segment.

65. The method of claim 64, further comprising calculating a second distance of the object from the segment, wherein the second distance is calculated from a second end of the segment.

66. The method of claim 55, further comprising identifying an overlap between a new segment and an old segment, said old segment having been isolated before said new segment.

67. The method of claim 66, wherein said identifying step includes a comparison of a set of end-point values for the new segment and the old segment.

68. The method of claim 67, wherein the new segment and the old segment overlap if a first end-point of the new segment is closer to a first end of the line segment than a first end-point of the old segment and the first end-point of the new segment is further away from the first end of the line segment than the first end-point of the old segment.

69. The method of claim 67, wherein the new segment and the old segment overlap if a first end-point of the old segment is closer to a first end of the line segment than a first end-

point of the new segment and a second end-point of the old segment is further away from the first end of the line segment than the first end-point of the new segment.

70. The method of claim 66, further comprising determining if the new object is closer to the object scene than the old object along the overlap.

71. The method of claim 70, further comprising adjusting the old segment to reflect the overlap.

72. The method of claim 71, wherein the adjusting step includes removing from the old segment a portion of the old segment included in the overlap.

73. The method of claim 71, wherein the adjusting step includes modifying an end-point of the old segment such that the overlap is eliminated.

74. The method of claim 71, wherein the old segment is shortened by a length of the overlap.

75. The method of claim 71, wherein the adjusting step includes calculating a second distance of the old object from the segment, wherein the second distance is calculated from a new end-point coordinate resulting from the adjusting step.

76. The method of claim 55, further comprising setting a maximum distance value associated with the line sample to the distance of the object from the segment.

77. The method of claim 76, further comprising resetting the maximum distance value associated with the line sample when an old segment associated with the maximum distance is overlapped by a new segment such that the object associated with the new segment is closer to the line sample along the overlap.

78. The method of claim 77, wherein the maximum distance value is reset to a distance of the object associated with the new segment from the object scene.

79. The method of claim 55, further comprising setting a maximum distance value associated with an area of the object scene including the line sample to the distance of the object from the segment.

80. The method of claim 79, wherein the region of the object scene comprises one or more sub-pixels.

81. The method of claim 79, wherein the region of the object scene comprises one or more pixels.

82. The method of claim 55, further comprising setting a maximum distance value associated with the line sample to the distance of the object from the segment.

83. The method of claim 55, further comprising

identifying a portion of the line sample overlapping a set of objects; and

computing a color value for the portion by reference to the set of objects,

whereby a color value for a line sample is calculated.

84. The method of claim 83, wherein the set of objects include a transparent object.

85. The method of claim 83, wherein the set of objects includes an opaque object.

86. The method of claim 83, wherein the set of objects includes one or more objects.

87. The method of claim 83, wherein the computing step includes sorting the segments that comprise the set of objects by reference to a distance from the line sample.

88. The method of claim 83, wherein the identifying step includes

ascertaining a first position on the line sample that marks a beginning of an overlap of one or more objects by the line sample;

locating a second position on the line sample that marks an event affecting the computing step; and

designating the portion of the one or more objects that the line sample overlaps between the first and second position as a set of objects.

89. The method of claim 88, wherein the event marks an end of an overlap of one or more objects by the line sample.

90. The method of claim 88, wherein the event marks a beginning of an overlap of one or more objects by the line sample.

91. The method of claim 88, wherein the event marks an intersection between one or more objects that the line sample overlaps.

92. The method of claim 83, further comprising computing a color value for the line sample by reference to a color value computed for one or more said sets of objects.

93. The method of claim 83, wherein a contribution of a set of objects to the color value for the line sample is a function of a length of the portion of the line sample overlapping the set of objects.

94. The method of claim 55, further comprising

selecting a number of positions along the line sample;

computing a color value by reference to one or more objects the line sample overlaps at the number of positions; and

combining the color value computed for each of the positions along the line sample, whereby a color value for a line sample is calculated.

95. The method of claim 1, wherein the combining step comprises

selecting a subset of line samples from the set of line samples; and

computing a color value for the subset of line samples.

96. The method of claim 95, wherein the color value is assigned to a pixel.

97. The method of claim 95, wherein the subset of lines samples is distributed within a region of the object scene.

98. The method of claim 97, wherein the region comprises a pixel.

99. The method of claim 97, wherein the region comprises a set of pixels.

100. The method of claim 95, wherein the computing step includes assigning a weight to a line sample in the subset of line samples, said weight affecting a contribution of the line sample to the color value.

101. The method of claim 100, wherein the weight is a function of a distance of a line sample from a position on the object scene.

102. The method of claim 95, wherein the position is a center of a pixel.

103. The method of claim 100, wherein the weight of a line sample is a function of a length of the line sample.

104. The method of claim 103, wherein the length of the line sample is determined by reference to a portion of the line sample for which a color value is defined.

105. The method of claim 103, wherein the weight is reduced by an amount proportional to an amount by which the line sample is shorter than a maximum line sample length.

106. The method of claim 105, wherein the maximum line sample length is a maximum distance across a pixel.

107. The method of claim 1, wherein the combining step includes

selecting a set of points across the object scene such that the points form a regular pattern; and

interpolating the view of objects in an object scene along each line sample in the set of line samples at each point in the set of points.

108. The method of claim 1, wherein the combining step includes

selecting a set of points across the object scene such that the points form a regular pattern; and

extrapolating the view of objects in an object scene along each line sample in the set of line samples to each point in the set of points.

109. A method of sampling an object scene, comprising:

subdividing an object scene to form a grid;

positioning a line sample in each cell of the grid, wherein the line sample is positioned by

orienting the line sample by reference to a non-regular sequence of numbers;

translating the line sample within the cell such that an intersection of the line sample and the grid form an area; and

determining the object scene along the line sample in each cell of the grid.

110. The method of claim 109, wherein the translating step comprises

selecting the area formed by the intersection of the line sample and the grid by reference to a non-regular sequence of numbers; and

deriving a translation amount from the selected area.

111. The method of claim 109, wherein the translating step comprises

determining a maximum translation amount, the maximum translation amount a function of the orienting step; and

selecting a translation amount within the maximum translation amount by reference to a non-regular sequence of numbers.

112. A method of sampling object scene data, comprising:

distributing a set of line samples across an image plane such that the distribution of the line samples is non-regular;

projecting objects defined in object scene data onto the image plane;

computing a view of objects each line sample in the set of line samples overlaps; and

combining the view of objects each line sample overlaps.

113. A method of defining an array of pixels from object scene data, comprising:

distributing a set of line samples across the array of pixels in a non-regular pattern;

computing a view of an object scene overlapped by each line sample in the set of line samples; and

combining the view of the object scene overlapped by a subset of line samples from the set of line samples for each pixel in the array of pixels.

114. A method of forming a video image frame, wherein characteristic information of each pixel is determined by line sampling object scene data, wherein a line sample is positioned within a boundary of each pixel in a non-regular pattern.

115. A method of forming a video image frame that specifies characteristic information of each pixel of an array of pixels that forms the video image frame, wherein the characteristic information of each pixel is determined by line sampling object scene data, wherein the object scene data includes information about changes in an object scene that occur during a time period of the video image frame, wherein a line sample is positioned within each pixel and within the time period by reference to a non-regular sequence of numbers, whereby any motion blur of the object scene is included in the video image frame.

116. A method of forming a view of an object scene, comprising

establishing a plurality of characteristics of an optical imaging system including an aperture size and a focal plane relative to objects in an object scene;

positioning a set of line samples across an object scene;

determining a view of the objects along each line sample in the set of line samples by reference to the position of an object in the object scene and the plurality of characteristics of the optical imaging system; and

combining the view of the object scene along each line sample in the set of line samples.

117. A method of forming a view of an object in an object scene, comprising

positioning a line sample on an image plane by reference to a non-regular sequence of numbers;

establishing a plurality of characteristics of an optical imaging system including an aperture size and a focal plane relative to an object in an object scene;

selecting for the line sample a position on the optical imaging system through which to project the object in the object scene onto the image plane;

transforming the object by reference to the selected position on the optical imaging system while projecting the object onto the image plane; and

determining a view of the object along the line sample.

118. A method of forming a video image frame that specifies characteristic information of each pixel of an array of pixels that forms the video image frame;

wherein characteristic information of each pixel is determined by line sampling object scene data at a position within a boundary of each of said pixels, said position selected by reference to a non-regular sequence of numbers; and

wherein the characteristic information of each pixel is further determined by point sampling the object scene data.

119. A method for line sampling image data in a computer system for determining characteristic information of a pixel, comprising:

defining a plurality of sample areas comprising at least a portion of a pixel;

selecting line sample positions within said areas such that the distribution of line samples is non-regular; and

combining characteristic information of the line samples in the pixel, thereby to determine characteristic information of the pixel.

120. A method of forming a video image frame that specifies characteristic information of each area of an array of areas that form the video image frame, comprising

defining a plurality of substantially non-overlapping portions within said areas;

positioning a line sample within a non-overlapping portion by reference to a non-regular sequence of numbers;

sampling object scene data at each line sample in a non-overlapping portion; and

combining object scene data along a set of line samples from each area.

121. A method of forming a video image frame that specifies characteristic information of each pixel of an array of pixels that forms the video image frame, including

positioning line samples in a non-regular, spatial distribution across the video image frame;

distributing line samples in a non-regular, temporal distribution within a time period associated with the video image frame; and

combining object scene data along each line sample to determine characteristic information of each pixel in the array of pixels.

122. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for subdividing an object scene to form a grid;

instructions for positioning a line sample in each cell of the grid, wherein the line sample is positioned by

orienting the line sample by reference to a non-regular sequence of numbers;

translating the line sample within a cell of the grid such that an intersection of the line sample and the grid form an area; and

instructions for determining the object scene along the line sample in each cell of the grid.

123. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for distributing a set of line samples across an image plane such that the distribution of the line samples is non-regular;

instructions for projecting objects defined in object scene data onto the image plane;

instructions for computing a view of objects each line sample in the set of line samples overlaps; and

instructions for combining the view of objects each line sample overlaps.

124. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for distributing a set of line samples across an array of pixels in a non-regular pattern;

instructions for computing a view of an object scene overlapped by each line sample in the set of line samples; and

instructions for combining the view of the object scene overlapped by a subset of line samples from the set of line samples for each pixel in the array of pixels.

125. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising instructions for determining characteristic information of each pixel in an array of pixels by line sampling object scene data, wherein the instructions position a line sample within a boundary of each pixel in a non-regular pattern.

126. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising instructions for line sampling object scene data to determine characteristic information of each pixel in an array of pixels that forms a video image frame, wherein the object scene data includes information about changes in an object scene that occur during a time period of the video image frame, and wherein the instructions position a line sample within each pixel and within the time period by reference to a non-regular sequence of numbers.

127. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for establishing a plurality of characteristics of an optical imaging system including an aperture size and a focal plane relative to objects in an object scene;

instructions for positioning a set of line samples across an object scene;

instructions for determining a view of the objects along each line sample in the set of line samples by reference to the position of an object in the object scene and the plurality of characteristics of the optical imaging system; and

instructions for combining the view of the object scene along each line sample in the set of line samples.

128. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for positioning a line sample on an image plane by reference to a non-regular sequence of numbers;

instructions for establishing a plurality of characteristics of an optical imaging system including an aperture size and a focal plane relative to an object in an object scene;

instructions for selecting for the line sample a position on the optical imaging system through which to project the object in the object scene onto the image plane;

instructions for transforming the object by reference to the selected position on the optical imaging system while projecting the object onto the image plane; and

instructions for determining a view of the object along the line sample.

129. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising instructions for forming a video image frame that specifies characteristic information of each pixel of an array of pixels that forms the video image frame, wherein the instructions determine characteristic information of each pixel by line sampling object scene data at a

position within a boundary of each of said pixels and by point sampling object scene data at a position within the boundary of each of said pixels.

130. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for defining a plurality of sample areas comprising at least a portion of a pixel;

instructions for selecting line sample positions within said areas such that the distribution of line samples is non-regular; and

instructions for combining characteristic information of the line samples in the pixel, thereby to determine characteristic information of the pixel.

131. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for defining a plurality of substantially non-overlapping portions within an area of an array of areas that form a video image frame;

instructions for positioning a line sample within a non-overlapping portion by reference to a non-regular sequence of numbers;

instructions for sampling object scene data at each line sample in a non-overlapping portion; and

instructions for combining object scene data along a set of line samples from each area.

132. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for positioning line samples in a non-regular, spatial distribution across an array of pixels that form a video image frame;

instructions for distributing line samples in a non-regular, temporal distribution within a time period associated with the video image frame; and

instructions for combining object scene data along each line sample to determine characteristic information of each pixel in the array of pixels.

133. A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

instructions for distributing a set of line samples across an object scene such that the distribution of the set of line samples is non-regular;

instructions for computing a view of the object scene along each line sample in the set of line samples; and

instructions for combining the view of the object scene along each line sample in the set of line samples to form a view of the object scene.